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10/817,483

04/02/2004

Jeffrey E. Habben

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06/15/2007

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EXAMINER

BAUM, STUART F

ART UNIT

PAPER NUMBER

1638

MAIL DATE

DELIVERY MODE

06/15/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/817,483

Applicant(s)

HABBen ET AL.

Examiner

Stuart F. Baum

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19, 21, 22, 25, 28, 29, 33-44 and 49-69 is/are pending in the application.
- 4a) Of the above claim(s) 1-17, 21, 22, 38-43 and 55-65 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18, 19, 25, 28, 29, 33-37, 44, 49-54 and 66-69 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

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DETAILED ACTION

1. The amendment filed 3/21/2007 has been entered.
2. Claims 1-19, 21-22, 25, 28-29, 33-44, 49-69 are pending.

Claims 1-17, 21-22, 38-43, 55-65 are withdrawn from consideration for being drawn to non-elected inventions.

Claims 20, 23-24, 26-27 and 30-32 have been canceled.

Claims 66-69 have been newly added and are drawn to the elected invention.

3. Claims 18-19, 25, 28-29, 33-37, 44, 49-54 and 66-69, including SEQ ID NO: 1, 3 and 4 are examined in the present office action.
4. Rejections and objections not set forth below are withdrawn.
5. The text of those sections of Title 35, U.S. Code not included in this office action can be found in a prior office action.

Claim Objections

6. Claims 66 and 67 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The instant claims are drawn to any polynucleotide encoding any protein involved in cytokinin biosynthesis, whereas the claim from which they are dependent is drawn to a specific enzyme, i.e., ipt.

Written Description

7. Claims 18-19, 25, 28-29, 33-36, 44, 49-53 remain rejected and new claims 66-69 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This rejection is maintained for the reasons of record set forth in the Official action mailed 8/9/2006. Applicant's arguments filed 3/21/2007 have been fully considered but they are not persuasive.

Applicants contend the specification provides a broad range of polynucleotides encoding isopentenyl transferase, which refers to ipt genes from Arabidopsis and maize (page 18 of Remarks, 1st paragraph).

The Office contends ipt genes from organisms other than Agrobacterium were known only after the filing date of the parent application, and therefore were not in Applicants' possession at the time of filing.

Applicants contend *Lilly* provides a standard for "an adequate written description of a DNA" to be claimed and is not appropriate for method claims directed to the function of the recited enzyme (page 18 of Remarks, 1st paragraph). Applicants contend the invention encompasses use of polynucleotides encoding polypeptides which retain substantially the same, or increased, biological function or activity (page 18 of Remarks, 3rd paragraph). Applicants contend the function of the polypeptide is the common element and the source is not critical. Applicants state "... it is the claimed invention which must be adequately described, not every

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means possible of attaining the invention, and certainly not those means which “may arise after the application is filed” (page 19 of Remarks, 3rd full paragraph).

The Office contends The Guidelines specify that methods of using inadequately described products (sequences) are also inadequately described. See *University of Rochester v. G.D. Searle & Co., Inc.*, 68 USPQ2d 1424,1433 (DC WNY 2003), which teaches that method claims are properly subjected to a written description rejection if the starting material required by that method is itself inadequately described. The Office contends Applicants were not in possession of the broadly claimed genus of ipt genes, which includes both bacterial and plant ipt genes, at the time of filing the instant application.

Scope of Enablement

8. Claims 18-19, 33-35, 44 and 50-52 remain rejected and new claims 66-69 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a transgenic plant and method for increasing cytokinin activity comprising transforming a plant with SEQ ID NO:1 or with a nucleic acid encoding an isopentenyl transferase (IPT) protein, wherein the nucleic acid is isolated from *Agrobacterium*, and wherein the nucleic acid is operably linked to the Zag2.1 promoter, or Zap promoter or tb1 promoter, and wherein the resultant plant has an increased seed yield, does not reasonably provide enablement for a transgenic plant or method comprising a polynucleotide encoding any protein involved in cytokinin biosynthesis, or encoding any IPT protein from any organism operably linked to any meristem-preferred promoter or a PCNA2 promoter. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make

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and/or use the invention commensurate in scope with these claims. This rejection is maintained for the reasons of record set forth in the Official action mailed 8/9/2006. Applicant's arguments filed 3/21/2007 have been fully considered but they are not persuasive.

Applicants contend that the cited state-of-the-art uses promoters that are not meristem-preferred (page 20 of Remarks, 2nd and 3rd paragraphs).

The Office contends that Applicants do not define a "meristem-preferred" promoter. The Office contends "meristem" is defined as "Tissue primarily concerned with protoplasmic synthesis and formation of new cells by division" (Esau, K. "Anatomy of Seed Plants" 2nd edition. John Wiley & Sons. New York, 1977. See page 515). Therefore, any promoter that expresses in cells that are dividing is considered a "meristem-preferred" promoter.

Applicants request the correct page number for the Sa et al reference (page 20 of Remarks, bottom paragraph).

The Office contends the office action should have specified "abstract" for the location of the cited material.

Applicants contend given the teachings of Takei et al, undue experimentation would not be required by one of skill in the art to determine whether a putative ipt gene would be useful in the invention as claimed (page 21 of Remarks, top paragraph).

The office contends that given the teachings of Takei et al taken with the office's interpretation of "meristem-preferred" promoter as discussed above, and taken with new claims 66-67, and the other state-of-the-art as discussed in the previous office action mailed 8/9/2006, undue trial and error experimentation would be required by one of skill in the art to practice the broadly claimed invention.

Claim Rejections - 35 USC § 102

9. Claims 18-19, 44 remain rejected under 35 U.S.C. 102(b) as being anticipated by Amasino et al (November, 1997, U.S. Patent Number 5,689,042). This rejection is maintained for the reasons of record set forth in the Official action mailed 8/9/2006. Applicant's arguments filed 3/21/2007 have been fully considered but they are not persuasive.

Applicants contend a senescence-associated promoter is not a meristematic promoter (page 21 of Remarks, 4th paragraph).

The Office contends that Applicants do not define a "meristem-preferred" promoter. The Office contends "meristem" is defined as "Tissue primarily concerned with protoplasmic synthesis and formation of new cells by division" (Esau, K. "Anatomy of Seed Plants" 2nd edition. John Wiley & Sons. New York, 1977. See page 515). Therefore, any promoter that expresses in cells that are dividing is considered a "meristem-preferred" promoter. The Office contends that the senescence-associated promoter of Amasino et al expresses in cells that are dividing and therefore is a meristem-preferred promoter.

10. Claims 18-19, 33, and 50 remain rejected under 35 U.S.C. 102(e) as being anticipated by Martineau (1995, U.S. Patent Number 6,329,570 B1). This rejection is maintained for the reasons of record set forth in the Official action mailed 8/9/2006. Applicant's arguments filed 3/21/2007 have been fully considered but they are not persuasive.

Applicants contend a promoter functional in a cotton ovule integument cell is not a meristematic promoter (page 21 of Remarks, 6th paragraph).

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The Office contends that Applicants do not define a “meristem-preferred” promoter. The Office contends “meristem” is defined as “Tissue primarily concerned with protoplasmic synthesis and formation of new cells by division” (Esau, K. “Anatomy of Seed Plants” 2nd edition. John Wiley & Sons. New York, 1977. See page 515). Therefore, any promoter that expresses in cells that are dividing is considered a “meristem-preferred” promoter. The Office contends that a promoter functional in cotton ovule integument cells is a meristematic promoter because cells of the integuments divide during seed development.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 18-19, 33-35, 44, 50-52 and 68-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martineau (1995, U.S. Patent Number 6,329,570 B1) taken with Gardner et al (1997, NCBI Accession Number V00140).

The claims are drawn to a method of modulating cytokinin activity in a plant or a transgenic plant comprising transforming a plant with a recombinant expression cassette comprising a meristem-preferred promoter operably linked to a polynucleotide encoding isopentenyl transferase, or wherein said expression cassette further comprises one or more enhancer elements of a highly-expressed gene, wherein the enhancer element comprises the 35S

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enhancer of cauliflower mosaic virus, or comprises SEQ ID NO:4, or wherein the plant is any plant listed in any one of claims 68 and 69.

Martineau discloses a transgenic plant and method for increasing the rate of boll production and number of bolls produced by a transgenic cotton plant comprising a DNA construct comprising a transcriptional and translational initiation region functional in a cotton ovule integument cell operably linked to a DNA sequence encoding an enzyme or polypeptide that increases the biosynthesis of a growth hormone wherein said enzyme is isopentenyl transferase (column 33-36, claims 1-20). The Office contends that Applicants do not define a “meristem-preferred” promoter. The Office contends “meristem” is defined as “Tissue primarily concerned with protoplasmic synthesis and formation of new cells by division” (Esau, K. “Anatomy of Seed Plants” 2nd edition. John Wiley & Sons. New York, 1977. See page 515). Therefore, any promoter that expresses in cells that divide is considered a “meristem-preferred” promoter. The Office contends that a promoter functional in cotton ovule integument cells is a meristematic promoter because cells of the integuments divide during seed development.

Martineau does not teach an enhancer element from the 35S promoter or SEQ ID NO:4 or any plant listed in any one of claims 68-69.

Gardner et al disclose the 35S promoter which includes enhancer regions and includes SEQ ID NO:4.

Given the recognition of those skilled in the art the value of transforming plants with an enzyme to alter hormone biosynthesis as taught by Martineau, it would have been obvious to one of skill in the art to use transform a plant with a construct comprising a nucleic acid sequence encoding ipt as taught by Martineau and to modify this method by operably linking an enhancer

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element of the 35S promoter as taught by Gardner et al. One of skill in the art would be motivated to use the sequence of Gardner et al because it is well known in the art at the time the application was filed that enhancer elements from the 35S promoter increase expression of heterologous genes in plants.

Thus the claimed invention would have been *prima facie* obvious as a whole to one of ordinary skill in the art at the time it was made, especially in the absence of evidence to the contrary.

Double Patenting

12. Claims 18-19, 25, 28-29, 33-37, 44, 49-54 remain rejected and new claims 66-69 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 6,992,237 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims are obvious over the claims of Patent No. 6,992,237 B1. This rejection is maintained for the reasons of record set forth in the Official action mailed 8/9/2006. Applicant's arguments filed 3/21/2007 have been fully considered but they are not persuasive.

Applicants contend the claim amendments have obviated the double-patenting rejection (page 22 of Remarks, top paragraph).

The Office contends the amended claims are still obvious over the claims of patent 6,992,237 B1 for the reasons of record stated in the office action mailed 8/9/2006.

13. No claims are allowed.

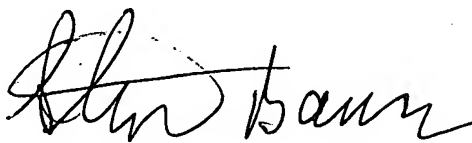
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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stuart F. Baum whose telephone number is 571-272-0792. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached at 571-272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1600.

Stuart F. Baum Ph.D.
Primary Examiner
Art Unit 1638
June 8, 2007



STUART F BAUM, PH.D.
PRIMARY EXAMINER